Range-wide climate vulnerability assessment for threatened bull trout

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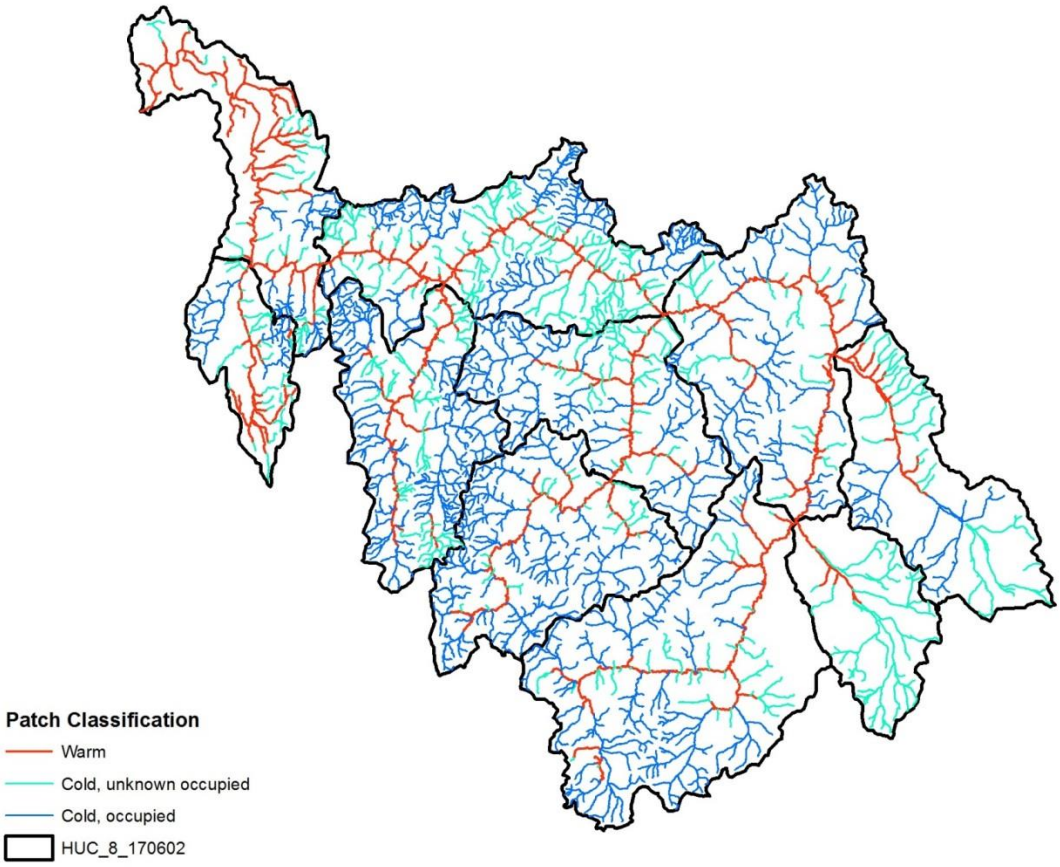
The threatened bull trout (*Salvelinus confluentus*) depends more on cold water than any other species of salmon or trout in the Northwest. Bull trout can also be sensitive to floods that disturb eggs and fry that incubate in stream gravel nests over the winter. Climate warming is likely to spell trouble for bull trout if it leads to warming of stream temperatures and more rain and flooding during the winter. We also know that bull trout are threatened by existing human land and water uses, as well as non-native trout species that can compete with and sometimes interbreed with them. The challenge in this study is to address these different threats across the vast area where bull trout live in the Northwest, including Oregon, Washington, Idaho, Nevada, and Montana. To this end we are mapping the habitats where bull trout live, and measuring the importance different threats across the species' range in the Northwest. The results of this work will allow us to better understand where different threats are operating to influence bull trout and help to identify appropriate conservation actions to ensure the bull trout can persist in the face of climate change.

The map below shows suitable habitats for bull trout in the Salmon River basin in central Idaho. Black outlines on the map show major watersheds within the Salmon River. Red lines are

streams that are too warm to support bull trout on a year-round basis. The teal lines show streams that are cold enough to support spawning and rearing bull trout, but their presence in those streams is unknown. The blue lines show streams where bull trout are present.

In the Salmon River, bull trout are more likely to be present in larger networks of streams with cold water. This patchwork of cold water habitats forms the template for our study. We are now in the process of mapping local and climate-related threats in these habitats to understand how they relate to where bull trout are found. This process will be repeated across the range of bull trout in large basins like the Salmon River to give us a range-wide view of these threats in Oregon, Washington, Idaho, Montana, and Nevada.



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